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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,651	05/01/2006	Hisashi Matsuda	290428US3PCT	3206
22850 7590 01/11/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER VERDIER, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			3745	
			NOTIFICATION DATE	DELIVERY MODE
			01/11/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/577,651

Applicant(s)

MATSUDA ET AL.

Examiner

Christopher Verdier

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5-1-06, 10-10-06.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Drawings

The drawings are objected to because in figure 28, "VOOT" should be changed to -- ROOT --. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The abstract of the disclosure is objected to because in line 6, -- (fillet) -- should be inserted after "coating portion". Correction is required. See MPEP § 608.01(b).

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 1, "DESCRIPTION" is superfluous and should be deleted.

On page 5, lines 7-8 are non-idiomatic.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, line 6, claim 2, line 3, claim 3, line 2, and claim 8, lines 2 and 5 recite a "coating portion". The coating portion is actually a fillet 14a, 14b, for example. The use of the term "coating portion" is contrary to the accepted meaning of a coating. In the claims, "coating" should be changed to -- fillet --. Claim 7, lines 3-5, which recite that the fan-like configuration with respect to the stagnation point of the working fluid that collides against the front edge portion of the blade body is set to be in a range between + - 15 degrees and + - 60 degrees, is unclear because the claim does not clearly define which elements (i.e. the stagnation point) that

the angular range extends between. Claim 12, which recites that the wall surfaces include a downward inclined surface and an upward inclined surface linearly angled from the front edge portions at the root and the tip sides toward the upstream side, is unclear as to which portion is inclined downward and which portion is inclined upward, and is inaccurate. As seen in figure 13, the wall surface 13 at the root is inclined downward while the wall surface 13b at the tip is inclined upward. Claim 13, which recites that the wall surfaces include downward and upward inclined curved surfaces curved from a center of a width of the blade body toward the upstream side of the front edge portion, is unclear as to which portion is curved downward and which portion is curved upward, and is inaccurate. As seen in figure 22, the wall surface 13a at the root is curved downward while the wall surface 13b at the tip is curved upward.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 8-12, and 14, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Pearce 3,959,966. Disclosed is a turbine blade cascade

structure in which a plurality of blades 13 are provided in series on a wall surface 17, 32 in a circumferential direction, wherein a corner portion between the wall surface and a front edge portion of each of blade bodies supported by the wall surface, to which a working fluid flows is provided with an unnumbered coating/fillet portion that extends to an upstream side of a flow of the working fluid. The root side and tip side of the blade body are provided with the coating/fillet portion. The coating/fillet portion is formed as a protruded portion that is raised from the upstream side to a height direction of the front edge portion of the blade body. The protruded portion is formed to have a concave curved surface from a base portion at the upstream side to the height direction of the front edge portion of the blade body. The blade body is supported by the wall surface at a root side of the blade body and the wall surface at a tip side of the blade body. The blade body is supported by the wall surface at the root side 17 (note that either end of the blade may be considered to be the root), and the wall surface includes a straight downward inclined surface near 25 linearly angled from the front edge portion of the blade body toward the upstream side (a blade 13 at the lower circumference of the turbine has the downward linearly angled inclined surface). The blade body is supported by the wall surface at the root side 32, and the wall surface includes a downward inclined curved surface curved from a center of a width of the blade body toward the upstream side of the front edge portion. The blade body is supported by the wall surfaces at the root side and the tip side, and the wall surfaces include a downward inclined surface near 32 and an upward inclined surface near 25 linearly angled from the front edge portions at the root and the tip sides toward the upstream side. The blade body is supported by the wall surfaces at the root side and the tip side, and the wall surface for supporting the blade body at the root side includes a downward inclined surface near 32 curved from the center of the

width of the blade body to the upstream side of the front edge portion, and the wall surface for supporting the blade body at the tip side includes an upward inclined surface near 25 linearly angled so as to extend from the front edge portion of the blade body toward the upstream side. Concerning claim 8, which recites that the coating is formed as a protruded portion that is raised from the upstream side to the height direction of the front edge portion of the blade body, which is formed by selecting one of a coating connecting piece which has been preliminarily made as an independent member, a machined piece together with the blade body, and a welded deposit, these are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 1-4, 8-9, 11, and 13, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Crossley 3,843,279. Disclosed is a turbine blade cascade structure in which a plurality of blades 14 are provided in series on a wall surface 22, 44 in a circumferential direction, wherein a corner portion between the wall surface and a front edge portion of each of blade bodies supported by the wall surface, to which a working fluid flows is provided with an unnumbered coating/fillet portion that extends to an upstream side of a flow of the working fluid. The root side and tip side of the blade body are provided with the coating/fillet portion. The coating/fillet portion is formed as a protruded portion that is raised from the

upstream side to a height direction of the front edge portion of the blade body. The protruded portion is formed to have a concave curved surface from a base portion at the upstream side to the height direction of the front edge portion of the blade body. The blade body is supported by the wall surface 44 at a root side of the blade body and the wall surface 22 at a tip side of the blade body. The blade body is supported by the wall surface at the root side 44, and the wall surface includes a downward inclined curved surface curved from a center of a width of the blade body toward the upstream side of the front edge portion. The blade body is supported by the wall surface 44 at a root side of the blade body and the wall surface 22 at a tip side of the blade body, and the wall surfaces include downward and upward inclined curved surfaces curved from a center of a width of the blade body toward the upstream side of the front edge portion. Concerning claim 8, which recites that the coating is formed as a protruded portion that is raised from the upstream side to the height direction of the front edge portion of the blade body, which is formed by selecting one of a coating connecting piece which has been preliminarily made as an independent member, a machined piece together with the blade body, and a welded deposit, these are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 1-3, 8-10, 12, and 15, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Tiemann 2002/0182067. Disclosed is a turbine blade cascade structure in which a plurality of blades 11a are provided in series on a wall surface 27, 47 in a circumferential direction, wherein a corner portion between the wall surface and a front edge portion of each of blade bodies supported by the wall surface, to which a working fluid flows is provided with a coating portion 50 that extends to an upstream side of a flow of the working fluid. The root side and tip side of the blade body are provided with the coating portion. The coating portion is formed as a protruded portion that is raised from the upstream side to a height direction of the front edge portion of the blade body. The blade body is supported by the wall surface at a root side of the blade body and the wall surface at a tip side of the blade body. The blade body is supported by the wall surface at the root side near 52, and the wall surface includes a straight downward inclined surface linearly angled from the front edge portion of the blade body toward the upstream side. The blade body is supported by the wall surfaces at the root side and the tip side, and the wall surfaces include a downward inclined surface near 52 and an upward inclined surface near 52 linearly angled from the front edge portions at the root and the tip sides toward the upstream side. The wall surface is flat. Concerning claim 8, which recites that the coating is formed as a protruded portion that is raised from the upstream side to the height direction of the front edge portion of the blade body, which is formed by selecting one of a coating connecting piece which has been preliminarily made as an independent member, a machined piece together with the blade body, and a welded deposit, these are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-

process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 1-4, 6-10, and 12, as far as they are definite and understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Mazzola 6,851,924. Disclosed is a turbine blade cascade structure in which a plurality of blades 14 are provided in series on a wall surface 16, 18 in a circumferential direction, wherein a corner portion between the wall surface and a front edge portion 28 of each of blade bodies supported by the wall surface, to which a working fluid flows is provided with a coating/fillet portion 44 that extends to an upstream side of a flow of the working fluid. The root side and tip side of the blade body are provided with the coating/fillet portion. The coating/fillet portion is formed as a protruded portion that is raised from the upstream side to a height direction of the front edge portion of the blade body. The protruded portion is formed to have a concave curved surface from a base portion at the upstream side to the height direction of the front edge portion of the blade body. The blade body is supported by the wall surface at a root side of the blade body and the wall surface at a tip side of the blade body. The protruded portion having the concave curved surface is formed into a fan-like configuration that extends to a front side and a back side of the blade body with respect to a stagnation point of the working fluid that collides against the front edge portion of the blade body. The angle of a sector of the protruded portion having the fan-like configuration with respect to the stagnation point of the working fluid that collides against the front edge portion of

the blade body falls within the broad range between $+ -15^{\circ}$ and $+ -60^{\circ}$, since a sector is located in this angular range. The blade body is supported by the wall surface at the root side near 16 (note that either end of the blade may be considered to be the root), and the wall surface includes a straight downward inclined surface linearly angled from the front edge portion of the blade body toward the upstream side. The blade body is supported by the wall surfaces at the root side and the tip side, and the wall surfaces include a downward inclined surface near 18 and an upward inclined surface near 16 linearly angled from the front edge portions at the root and the tip sides toward the upstream side. Concerning claim 8, which recites that the coating is formed as a protruded portion that is raised from the upstream side to the height direction of the front edge portion of the blade body, which is formed by selecting one of a coating connecting piece which has been preliminarily made as an independent member, a machined piece together with the blade body, and a welded deposit, these are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yasugahira and Tsai are cited to show turbine blades with filleted portions. These references could also have been applied as they anticipate at least claim 1 under 35 U.S.C. 102, but are not applied at this time in order to avoid multiple rejections.

Stalker is cited to show a compressor blade with upwardly and downwardly curved portions.

Allowable Subject Matter

Claim 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

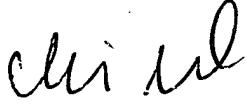
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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C.V
January 7, 2008


Christopher Verdier
Primary Examiner
Art Unit 3745